CLAIMS

What is claimed is:

1. A reaction system for the production of elastic polyurethane gels comprising:
 a. an isocyanate-reactive composition comprising:
 i. greater than 75% by weight of an isocyanate-reactive organic mono-ol having a molecular weight of 1000 or greater, and
 ii. from greater than 1 to less than 10% by weight of an organic crosslinker having a nominal isocyanate-reactive group functionality of 3 or greater and an equivalent weight per isocyanate-reactive functional group of less than 150; and
 b. an organic polyisocyanate composition,

 wherein the ratio of isocyanate groups to isocyanate-reactive groups in the reaction system is between 0.70 and 1.30 and the reaction system is essentially free of isocyanate-reactive monomers or oligomers other than those present in the isocyanate-reactive composition.

2. The reaction system of claim 1, wherein the organic mono-ol has a molecular weight of from greater than 1500 to about 3000.

3. The reaction system of claim 1, wherein the organic crosslinker consists essentially of a nominal tetrol having an isocyanate-reactive group equivalent weight of from greater than 65 to less than 80 and a molecular weight of between 200 and 350.

4. The reaction system of claim 3, wherein the nominal tetrol crosslinker consists essentially of an aliphatic amine initiated adduct formed from the reaction of an aliphatic amine with both ethylene oxide and propylene oxide.

5. The reaction system of claim 1, wherein the reaction system further comprises a fatty tertiary amine catalyst containing an alkyl or alkenyl group of greater than 10 carbon atoms and is essentially free of isocyanate-reactive groups.

6. The reaction system of claim 5, wherein the reaction system further comprises an organotin catalyst.

7. A process for preparing an elastic polyurethane gel comprising the steps of:

a. providing a reaction system comprising:

i. an isocyanate-reactive composition comprising:

a. greater than 75% by weight of an isocyanate-reactive organic mono-ol having a molecular weight of 1000 or greater, and

b. from greater than 1 to less than 10% by weight of an organic crosslinker having a nominal isocyanate-reactive group functionality of 3 or greater and an equivalent weight per isocyanate-reactive functional group of less than 150; and

ii. an organic polyisocyanate composition,

wherein the reaction system is essentially free of isocyanate-reactive monomers or oligomers other than those present in said isocyanate-reactive composition;

b. forming an intermediate liquid reaction mixture by mixing the components of the reaction system in proportions suitable for the formation of an elastic polyurethane gel; and

c. allowing the intermediate reaction mixture to cure under conditions suitable for the formation of an elastic polyurethane gel.

8. The process of claim 7, wherein the intermediate liquid reaction mixture is brought into contact with a material and allowed to cure under conditions suitable for the formation of an elastic polyurethane gel that is at least partially bonded to the material.

9. An elastic polyurethane gel comprising the reaction product of a reaction system comprising:

a. an isocyanate-reactive composition comprising:

i. greater than 75% by weight of an isocyanate-reactive organic mono-ol having a molecular weight of 1000 or greater, and

ii. from greater than 1 to less than 10% by weight of an organic crosslinker having a nominal isocyanate-reactive group functionality of 3 or greater and an equivalent weight per isocyanate-reactive functional group of less than 150; and

b. an organic polyisocyanate composition,

wherein the ratio of isocyanate groups to isocyanate-reactive groups in the reaction system is between 0.70 and 1.30 and the reaction system is essentially free of isocyanate-reactive monomers or oligomers other than those present in the isocyanate-reactive composition.

10. The elastic polyurethane gel of claim 9, wherein the organic mono-ol has a molecular weight of from greater than 1500 to about 3000.

11. The elastic polyurethane gel of claim 9, wherein the organic crosslinker consists essentially of a nominal tetrol having an isocyanate-reactive group equivalent weight of from greater than 65 to less than 80 and a molecular weight of between 200 and 350.

12. The elastic polyurethane gel of claim 11, wherein the nominal tetrol crosslinker consists essentially of an aliphatic amine initiated adduct formed from the reaction of an aliphatic amine with both ethylene oxide and propylene oxide.

13. The elastic polyurethane gel of claim 9, wherein the reaction system further comprises a fatty tertiary amine catalyst containing an alkyl or alkenyl group of greater than 10 carbon atoms and is essentially free of isocyanate-reactive groups.

14. The elastic polyurethane gel of claim 13, wherein the reaction system further comprises an organotin catalyst.